APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/612,060	07/01/2003	Zhigang Fan	D/A3165	3539

25944 7590 03/28/2007		EXAMINER
OLIFF & BERRIDGE, PLC P.O. BOX 19928 ALEXANDRIA, VA 22320		TUCKER, WESLEY J

ART UNIT	PAPER NUMBER
2624	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/28/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

	Application No.	Applicant(s)
Office Action Summary	10/612,060	FAN, ZHIGANG
	Examiner	Art Unit	
	Wes Tucker	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>21 December 2006</u>.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>01 July 2003</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1.   Applicant's amendment filed December 21st 2006 has been entered and made of record.

2.   Applicant has amended all of the original claims 1-20. Claims 1-20 are now pending.

3.   Applicant's remarks in view of the newly presented amendments have been considered, but are now moot in view of the newly presented rejection necessitated by the amendment. The new rejection is accordingly made FINAL.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4.   Claims 1-20 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent 5,822,469 to Silverstein.

With regard to claim 1, Silverstein discloses a method for reducing boundary effects in images with mixed screen patterns, comprising:

Halftoning <u>an original contone image, resulting in a halftone image with a plurality</u> <u>of halftone portions</u> (column 2, lines 44-54). The halftone portions are simply the image portions divided by the edges in the image.

Adjusting boundary regions <u>located between halftone portions of the halftone</u> <u>image</u> to minimize a brightness deviation <u>between the boundary regions and the original</u> <u>contone image</u> (column 1, lines 45-67 and column 2, lines 58-67 and column 3, lines 1-11). Silverstein discloses sharpening edges by making comparisons between luminance values of pixel in both the contone and halftone images. Sharpening edges is interpreted as adjusting boundary regions and the comparisons of luminance values between contone and halftone images is interpreted as brightness deviation minimization.

With regard to claim 2, Silverstein discloses the method according to claim 1 for reducing boundary effects <u>in</u> images, wherein adjusting <u>boundary regions</u> comprises:

Performing a low-pass filtering <u>of</u> halftones in the boundary regions, <u>a boundary</u> <u>region having a width that is one or more pixels wide</u> (column 4, lines 34-67). The post filtering operation disclosed by Silverstein is effectively a low-pass filtering operation because the low frequency image components or areas where pixels do not exceed a difference threshold are not filtered and image components consisting of pixels exceeding a difference threshold are processed or filtered.

With regard to claim 3, Silverstein discloses the method according to claim 2 for reducing boundary effects in images, wherein low-pass filtering further comprises:

Choosing a cut-off frequency for the low-pass filtering (column 4, lines 34-67). The threshold determination disclosed by Silverstein is interpreted as the cut-off frequency. Any pixels exceeding the difference also exceed the cut-off frequency for what is to be filtered.

With regard to claim 4, Silverstein discloses the method according to claim 2 for reducing boundary effects in images, wherein low-pass filtering further comprises:

choosing a cut-off frequency for the low-pass filtering that is substantially the halftone frequency (column 5, lines 5-10 and 33-46).

With regard to claim 5, Silverstein discloses the method according to claim 2 for reducing boundary effects in images, wherein adjusting boundary regions comprises:

Comparing a filtered portion of the halftone image to a corresponding portion of the original contone image and generating an error map (column 5, lines 10-20). The gradients of the halftone and corresponding original contone image are compared. The error map is effectively where the signs of difference don't match up and have to be switched by swapping pixels in the halftone image.

With regard to claim 6, the discussion of claim 5 applies. There is an error at each pixel location where the calculated differences are opposite and are accordingly switched.

With regard to claim 7, Silverstein discloses the method according to claim 6 for reducing boundary effects in images, further comprising:

adjusting pixels in the boundary regions to reduce a magnitude of <u>errors stored in the error map that correspond to the pixels</u> (column 3, lines 1-10). The comparison and swapping of pixels in border or edre regions is interpreted as reducing the magnitude of errors. The errors being if the differences do not match in sign, they are corrected. The pixels and errors are mapped as they must correspond in both the halftone and contone images.

With regard to claim 8, the discussion of claim 7 also applies. Silverstein disclose processing pixels in sequence (column 3, lines 46-58).

With regard to claim 9, the discussions of claims 7 and 8 apply. Silverstein discloses that the magnitude of error is determined by setting the threshold, meaning certain errors are processed before or instead of others according to the magnitude in pixel difference in the edge or border regions according to the specified threshold (column 4, lines 42-52).

With regard to claim 10, Silverstein discloses a method for reducing boundary effects in images with mixed screen patterns, comprising:

Halftoning an original contone image, resulting in a halftone image with a plurality of halftone portions (column 2, lines 44-54). The halftone portions are simply the image portions divided by the edges in the image.

Adjusting boundary regions located between halftone portions of the halftone image to minimize a brightness deviation between the boundary regions and the original contone image (column 1, lines 45-67 and column 2, lines 58-67 and column 3, lines 1-11). Silverstein discloses sharpening edges by making comparisons between luminance values of pixel in both the contone and halftone images. Sharpening edges is interpreted as adjusting boundary regions and the comparisons of luminance values between contone and halftone images is interpreted as brightness deviation minimization.

Siverstein further discloses performing a low-pass filtering of halftones in the boundary regions, a boundary region having a width that is one or more pixels wide (column 4, lines 34-67). The post filtering operation disclosed by Silverstein is effectively a low-pass filtering operation because the low frequency image components or areas where pixels do not exceed a difference threshold are not filtered and image components consisting of pixels exceeding a difference threshold are processed or filtered.

With regard to claims 11-15, the discussions of claims 3-7 apply respectively.

With regard to claim 16, the discussion of claim 10 applies.

With regard to claims 17-20, the discussions of claims 4-7 apply respectively.

Final Rejection

Applicant's amendment necessitated the new grounds of rejction presented in the Office Action. Accordingly, THIS ACTION IS MADE FINAL. See MPEP 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.
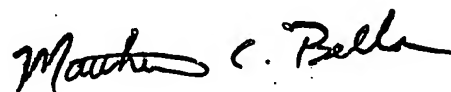
Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wes Tucker whose telephone number is 571-272-7427. The examiner can normally be reached on 9AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matt Bella can be reached on 571-272-7778. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Wes Tucker

3-22-07

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